1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1707 was composed of two water samples designated under SAF No. B01-114 with a Project Designation of: PFP Well Installation Sampling and Analysis – Water.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on April 11, 2002.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Tritium Analyses

The LCS and method blank were not scaled to the nominal aliquot of 0.01 L. No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.7 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.8 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

RECEIVED
JUN 13 2002
EDMC

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion

Melissa C. Mannion
Program Manager

4/11/02

Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

SDG 7230
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1707

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12XM2	200 West; Well No. C3803	WATER		R203011-01	B01-114	B01-114-10	02/27/02 14:10
B140B4	200 West	WATER		R203011-02	B01-114	B01-114-48	02/27/02 14:10
Method Blank		WATER		R203011-04	B01-114		
Lab Control Sample		WATER		R203011-03	B01-114		
Duplicate (R203011-01)	200 West; Well No. C3803	WATER		R203011-05	B01-114		02/27/02 14:10
Spike (R203011-02)	200 West	WATER		R203011-06	B01-114		02/27/02 14:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

SDG 7230
Contact Melissa C. Mannion

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1707

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7230	B01-114-10	B12XM2	WATER		6.25 L		03/01/02	2	R203011-01	7230-001
	B01-114-48	B140B4	WATER		6.25 L		03/01/02	2	R203011-02	7230-002
		Method Blank	WATER						R203011-04	7230-004
		Lab Control Sample	WATER						R203011-03	7230-003
		Duplicate (R203011-01)	WATER		6.25 L		03/01/02	2	R203011-05	7230-005
		Spike (R203011-02)	WATER		6.25 L		03/01/02	2	R203011-06	7230-006

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

SDG 7230
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1707

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	WATER	Americium 241 in Water	7024-074	5.0	2			1	1	1/1		
NP	WATER	Neptunium in Water	7024-074	5.0	2			1	1	1/1		
PU	WATER	Plutonium, Isotopic in Water	7024-074	5.0	2			1	1	1/1		
U	WATER	Uranium, Isotopic in Water	7024-074	5.0	2			1	1	1/1		
Beta Counting												
SR	WATER	Total Strontium in Water	7024-074	10.0	2			1	1	1/1		
TC	WATER	Technetium 99 in Water	7024-074	10.0	2			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	7024-074	20.0	2			1	1	1/1		
93B	WATER	Gross Beta in Water	7024-074	15.0	2			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	7024-074	15.0	2			1	1	1/1		
Liquid Scintillation Counting												
H	WATER	Tritium in Water	7024-074	10.0	2			1	1	1/1	1/1	X

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
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Form DVD-PBS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

SDG 7230
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1707

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B12XM2			R203011-01	7230-001	93A/93		03/26/02	04/11/02	MCM	Gross Alpha in Water
200 West; Well No. C3803		WATER	02/27/02	7230-001	93B/93		03/26/02	04/11/02	MCM	Gross Beta in Water
B01-114-10	B01-114		03/01/02	7230-001	AM		03/27/02	04/11/02	MCM	Americium 241 in Water
				7230-001	GAM		03/29/02	04/11/02	MCM	Gamma Emitters
				7230-001	H		04/06/02	04/11/02	MCM	Tritium in Water
				7230-001	NP		03/30/02	04/11/02	MCM	Neptunium in Water
				7230-001	PU		03/27/02	04/11/02	MCM	Plutonium, Isotopic in Water
				7230-001	SR		03/26/02	04/11/02	MCM	Total Strontium in Water
				7230-001	TC		04/06/02	04/11/02	MCM	Technetium 99 in Water
				7230-001	U		03/28/02	04/11/02	MCM	Uranium, Isotopic in Water
B140B4			R203011-02	7230-002	93A/93		03/26/02	04/11/02	MCM	Gross Alpha in Water
200 West		WATER	02/27/02	7230-002	93B/93		03/26/02	04/11/02	MCM	Gross Beta in Water
B01-114-48	B01-114		03/01/02	7230-002	AM		03/27/02	04/11/02	MCM	Americium 241 in Water
				7230-002	GAM		03/29/02	04/11/02	MCM	Gamma Emitters
				7230-002	H		03/29/02	04/11/02	MCM	Tritium in Water
				7230-002	NP		03/30/02	04/11/02	MCM	Neptunium in Water
				7230-002	PU		03/27/02	04/11/02	MCM	Plutonium, Isotopic in Water
				7230-002	SR		03/26/02	04/11/02	MCM	Total Strontium in Water
				7230-002	TC		04/05/02	04/11/02	MCM	Technetium 99 in Water
				7230-002	U		03/28/02	04/11/02	MCM	Uranium, Isotopic in Water
Method Blank			R203011-04	7230-004	93A/93		03/26/02	04/11/02	MCM	Gross Alpha in Water
		WATER		7230-004	93B/93		03/26/02	04/11/02	MCM	Gross Beta in Water
	B01-114			7230-004	AM		03/27/02	04/11/02	MCM	Americium 241 in Water
				7230-004	GAM		03/29/02	04/11/02	MCM	Gamma Emitters
				7230-004	H		03/29/02	04/11/02	MCM	Tritium in Water
				7230-004	NP		03/30/02	04/11/02	MCM	Neptunium in Water
				7230-004	PU		03/27/02	04/11/02	MCM	Plutonium, Isotopic in Water
				7230-004	SR		03/26/02	04/11/02	MCM	Total Strontium in Water
				7230-004	TC		04/05/02	04/11/02	MCM	Technetium 99 in Water
				7230-004	U		03/28/02	04/11/02	MCM	Uranium, Isotopic in Water

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

SDG 7230
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1707

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Lab Control Sample			R203011-03	7230-003	93A/93		03/27/02	04/11/02	MCM	Gross Alpha in Water
		WATER		7230-003	93B/93		03/27/02	04/11/02	MCM	Gross Beta in Water
	B01-114			7230-003	AM		03/28/02	04/11/02	MCM	Americium 241 in Water
				7230-003	GAM		03/29/02	04/11/02	MCM	Gamma Emitters
				7230-003	H		03/29/02	04/11/02	MCM	Tritium in Water
				7230-003	NP		03/30/02	04/11/02	MCM	Neptunium in Water
				7230-003	PU		03/27/02	04/11/02	MCM	Plutonium, Isotopic in Water
				7230-003	SR		03/26/02	04/11/02	MCM	Total Strontium in Water
				7230-003	TC		04/09/02	04/11/02	MCM	Technetium 99 in Water
				7230-003	U		04/02/02	04/11/02	MCM	Uranium, Isotopic in Water
Duplicate (R203011-01)			R203011-05	7230-005	93A/93		03/26/02	04/11/02	MCM	Gross Alpha in Water
200 West; Well No. C3803		WATER	02/27/02	7230-005	93B/93		03/26/02	04/11/02	MCM	Gross Beta in Water
	B01-114		03/01/02	7230-005	AM		03/27/02	04/11/02	MCM	Americium 241 in Water
				7230-005	GAM		03/29/02	04/11/02	MCM	Gamma Emitters
				7230-005	H		04/06/02	04/11/02	MCM	Tritium in Water
				7230-005	NP		03/30/02	04/11/02	MCM	Neptunium in Water
				7230-005	PU		03/27/02	04/11/02	MCM	Plutonium, Isotopic in Water
				7230-005	SR		03/26/02	04/11/02	MCM	Total Strontium in Water
				7230-005	TC		04/05/02	04/11/02	MCM	Technetium 99 in Water
				7230-005	U		03/28/02	04/11/02	MCM	Uranium, Isotopic in Water
Spike (R203011-02)			R203011-06	7230-006	H		03/29/02	04/11/02	MCM	Tritium in Water
200 West		WATER	02/27/02							
	B01-114		03/01/02							

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

SDG 7230
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1707

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP	SPIKE	TOTAL
93A/93	B01-114	Gross Alpha in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
93B/93	B01-114	Gross Beta in Water	900.0_ALPHABETA_GPC	2			1	1	1		5
AM	B01-114	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	2			1	1	1		5
GAM	B01-114	Gamma Emitters	GAMMA_GS	2			1	1	1		5
H	B01-114	Tritium in Water	906.0_H3_LSC	2			1	1	1	1	6
NP	B01-114	Neptunium in Water	NP237_LLE_PLATE_AEA	2			1	1	1		5
PU	B01-114	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	2			1	1	1		5
SR	B01-114	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	2			1	1	1		5
TC	B01-114	Technetium 99 in Water	TC99_TR_SEP_LSC	2			1	1	1		5
U	B01-114	Uranium, Isotopic in Water	UISO_PLATE_AEA	2			1	1	1		5
TOTALS				20			10	10	10	1	51

Lab id TMANC
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

R203011-04 **Method Blank**

METHOD BLANK

SDG	7230	Client/Case no	Hanford	SDG_H1707	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R203011-04	Client sample id	Method Blank		
Dept sample id	7230-004	Material/Matrix		WATER	
		SAF No	B01-114		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.116	0.50	0.89	3.0	U	93A
Gross Beta	12587-47-2	-0.698	1.7	2.9	4.0	U	93B
Tritium	10028-17-8	1.78	10	17	400	U	H
Total Strontium	SR-RAD	0.087	0.33	0.66	2.0	U	SR
Technetium 99	14133-76-7	-0.393	3.9	11	15	U	TC
Uranium 233/234	U-233/234	-0.031	0.063	0.24	1.0	U	U
Uranium 235	15117-96-1	0	0.076	0.29	1.0	U	U
Uranium 238	U-238	0	0.063	0.24	1.0	U	U
Neptunium 237	13994-20-2	0.075	0.30	0.57	1.0	U	NP
Plutonium 238	13981-16-3	0	0.059	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.059	0.23	1.0	U	PU
Americium 241	14596-10-2	0.038	0.15	0.29	1.0	U	AM
Potassium 40	13966-00-2	U		97		U	GAM
Cobalt 60	10198-40-0	U		7.5	25	U	GAM
Ruthenium 106	13967-48-1	U		70		U	GAM
Antimony 125	14234-35-6	U		18		U	GAM
Cesium 137	10045-97-3	U		7.4	15	U	GAM
Radium 226	13982-63-3	U		16		U	GAM
Radium 228	15262-20-1	U		34		U	GAM
Europium 152	14683-23-9	U		19	50	U	GAM
Europium 154	15585-10-1	U		24	50	U	GAM
Europium 155	14391-16-3	U		19	50	U	GAM
Thorium 228	14274-82-9	U		11		U	GAM
Thorium 232	TH-232	U		34		U	GAM
Uranium 235	15117-96-1	U		28		U	GAM
Uranium 238	U-238	U		910		U	GAM
Americium 241	14596-10-2	U		28		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/02

B L A N K , c o n t .

SDG	7230	Client/Case no	Hanford	SDG H1707	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R203011-04	Client sample id	Method Blank		
Dept sample id	7230-004	Material/Matrix		WATER	
		SAF No	B01-114		

QC-BLANK 41468

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

R203011-03 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7230
Contact Melissa C. Mannion

Client/Case no Hanford SDG H1707
Case no No. 630

Lab sample id R203011-03
Dept sample id 7230-003

Client sample id Lab Control Sample
Material/Matrix WATER
SAF No B01-114

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	59.5	4.6	1.1	3.0		93A	66.7	2.7	89	71-129	70-130
Gross Beta	73.3	3.8	2.8	4.0		93B	72.0	2.9	102	75-125	70-130
Tritium	234	17	17	400	J	H	231	9.2	101	80-120	80-120
Total Strontium	43.6	1.7	0.50	2.0		SR	43.2	1.7	101	83-117	80-120
Technetium 99	2210	34	8.2	15		TC	2180	87	101	83-117	80-120
Uranium 233/234	17.6	1.7	0.85	1.0		U	18.6	0.74	95	83-117	80-120
Uranium 235	14.9	1.5	0.19	1.0		U	15.1	0.60	99	82-118	80-120
Uranium 238	19.1	1.8	0.80	1.0		U	20.2	0.81	95	84-116	80-120
Neptunium 237	50.4	3.9	0.21	1.0		NP	49.7	2.0	101	85-115	80-120
Plutonium 238	30.4	3.1	0.27	1.0		PU	30.8	1.2	99	82-118	80-120
Plutonium 239/240	34.8	3.4	0.27	1.0		PU	33.0	1.3	106	82-118	80-120
Americium 241	23.4	2.5	0.28	1.0		AM	23.8	0.95	98	82-118	80-120
Cobalt 60	415	44	26	25		GAM	396	16	105	70-130	80-120
Cesium 137	499	41	32	15		GAM	476	19	105	72-128	80-120

PFP Well Installation Smpl. & Anal.

QC-LCS 41467

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

R203011-05 B12XM2

DUPLICATE

SDG	7230	Client/Case no	Hanford SDG H1707
Contact	Melissa C. Mannion	Case no	No. 630
DUPLICATE		ORIGINAL	
Lab sample id	R203011-05	Lab sample id	R203011-01
Dept sample id	7230-005	Dept sample id	7230-001
		Received	03/01/02
Client sample id	B12XM2		
Location/Matrix	200 West; Well No. C3803 WATER		
Collected/Volume	02/27/02 14:10 6.25 L		
Custody/SAF No	B01-114-10 B01-114		

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	0.984	1.4	1.9	3.0	U	93A	1.20	1.4	1.8	U	-	
Gross Beta	14.8	1.8	1.9	4.0		93B	13.8	1.8	1.9		7	42
Tritium	61.1	110	180	400	U	H	143	110	180	U	-	
Total Strontium	-0.046	0.28	0.59	2.0	U	SR	-0.047	0.31	0.64	U	-	
Technetium 99	16.0	4.8	11	15		TC	13.5	4.7	11	J	17	72
Uranium 233/234	1.37	0.38	0.17	1.0		U	1.04	0.33	0.18		27	64
Uranium 235	0.083	0.11	0.21	1.0	U	U	0.056	0.056	0.21	U	-	
Uranium 238	0.662	0.23	0.17	1.0	J	U	0.742	0.28	0.18	J	11	78
Neptunium 237	-0.098	0.20	0.75	1.0	U	NP	0	0.19	0.28	U	-	
Plutonium 238	0	0.071	0.27	1.0	U	PU	0	0.058	0.22	U	-	
Plutonium 239/240	0	0.071	0.27	1.0	U	PU	0.029	0.058	0.22	U	-	
Americium 241	0	0.10	0.38	1.0	U	AM	0.093	0.12	0.24	U	-	
Potassium 40	U		290		U	GAM	U		200	U	-	
Cobalt 60	U		15	25	U	GAM	U		20	U	-	
Ruthenium 106	U		110		U	GAM	U		150	U	-	
Antimony 125	U		30		U	GAM	U		37	U	-	
Cesium 137	U		14	15	U	GAM	U		16	U	-	
Radium 226	U		25		U	GAM	U		31	U	-	
Radium 228	U		58		U	GAM	U		61	U	-	
Europium 152	U		35	50	U	GAM	U		39	U	-	
Europium 154	U		49	50	U	GAM	U		60	U	-	
Europium 155	U		42	50	U	GAM	U		20	U	-	
Thorium 228	U		18		U	GAM	U		18	U	-	
Thorium 232	U		58		U	GAM	U		61	U	-	
Uranium 235	U		64		U	GAM	U		39	U	-	
Uranium 238	U		1700		U	GAM	U		2200	U	-	
Americium 241	U		100		U	GAM	U		16	U	-	

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/11/02

DUPLICATE, cont.

SDG 7230		Client/Case no Hanford	SDG H1707
Contact Melissa C. Mannion		Case no No. 630	
DUPLICATE	**ORIGINAL**		
Lab sample id R203011-05	Lab sample id R203011-01	Client sample id B12XM2	
Dept sample id 7230-005	Dept sample id 7230-001	Location/Matrix 200 West; Well No. C3803	WATER
	Received 03/01/02	Collected/Volume 02/27/02 14:10	6.25 L
		Custody/SAF No B01-114-10	B01-114

QC-DUP#1 41469

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

R203011-06 B140B4

MATRIX SPIKE

SDG	7230			Client/Case no	Hanford SDG H1707
Contact	Melissa C. Mannion			Case no	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R203011-06	Lab sample id	R203011-02	Client sample id	B140B4
Dept sample id	7230-006	Dept sample id	7230-002	Location/Matrix	200 West WATER
		Received	03/01/02	Collected/Volume	02/27/02 14:10 6.25 L
				Custody/SAF No	B01-114-48 B01-114

ANALYTE	SPIKE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	ORIGINAL pCi/L	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	30700	500	170	400	X	H	30900	1200	108	110	99	84-116	60-140

PFP Well Installation Smpl. & Anal.

QC-MS#2 41470

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-MS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

R203011-01 **B12XM2**

DATA SHEET

SDG	7230	Client/Case no	Hanford	SDG H1707	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R203011-01	Client sample id	B12XM2		
Dept sample id	7230-001	Location/Matrix	200 West; Well No. C3803	WATER	
Received	03/01/02	Collected/Volume	02/27/02 14:10	6.25 L	
		Custody/SAF No	B01-114-10	B01-114	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.20	1.4	1.8	3.0	U	93A
Gross Beta	12587-47-2	13.8	1.8	1.9	4.0		93B
Tritium	10028-17-8	143	110	180	400	U	H
Total Strontium	SR-RAD	-0.047	0.31	0.64	2.0	U	SR
Technetium 99	14133-76-7	13.5	4.7	11	15	J	TC
Uranium 233/234	U-233/234	1.04	0.33	0.18	1.0		U
Uranium 235	15117-96-1	0.056	0.056	0.21	1.0	U	U
Uranium 238	U-238	0.742	0.28	0.18	1.0	J	U
Neptunium 237	13994-20-2	0	0.19	0.28	1.0	U	NP
Plutonium 238	13981-16-3	0	0.058	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.029	0.058	0.22	1.0	U	PU
Americium 241	14596-10-2	0.093	0.12	0.24	1.0	U	AM
Potassium 40	13966-00-2	U		200		U	GAM
Cobalt 60	10198-40-0	U		20	25	U	GAM
Ruthenium 106	13967-48-1	U		150		U	GAM
Antimony 125	14234-35-6	U		37		U	GAM
Cesium 137	10045-97-3	U		16	15	U	GAM
Radium 226	13982-63-3	U		31		U	GAM
Radium 228	15262-20-1	U		61		U	GAM
Europium 152	14683-23-9	U		39	50	U	GAM
Europium 154	15585-10-1	U		60	50	U	GAM
Europium 155	14391-16-3	U		20	50	U	GAM
Thorium 228	14274-82-9	U		18		U	GAM
Thorium 232	TH-232	U		61		U	GAM
Uranium 235	15117-96-1	U		39		U	GAM
Uranium 238	U-238	U		2200		U	GAM
Americium 241	14596-10-2	U		16		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

R203011-02 B140B4

DATA SHEET

SDG	7230	Client/Case no	Hanford SDG H1707
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R203011-02	Client sample id	B140B4
Dept sample id	7230-002	Location/Matrix	200 West WATER
Received	03/01/02	Collected/Volume	02/27/02 14:10 6.25 L
		Custody/SAF No	B01-114-48 B01-114

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.65	1.4	1.6	3.0	J	93A
Gross Beta	12587-47-2	13.8	1.9	2.1	4.0		93B
Tritium	10028-17-8	108	110	180	400	U	H
Total Strontium	SR-RAD	-0.169	0.25	0.58	2.0	U	SR
Technetium 99	14133-76-7	13.5	4.9	11	15	J	TC
Uranium 233/234	U-233/234	1.10	0.34	0.18	1.0		U
Uranium 235	15117-96-1	0.057	0.057	0.22	1.0	U	U
Uranium 238	U-238	0.658	0.24	0.18	1.0	J	U
Neptunium 237	13994-20-2	0	0.20	0.29	1.0	U	NP
Plutonium 238	13981-16-3	0	0.049	0.19	1.0	U	PU
Plutonium 239/240	PU-239/240	0.049	0.049	0.19	1.0	U	PU
Americium 241	14596-10-2	0	0.096	0.18	1.0	U	AM
Potassium 40	13966-00-2	U		400		U	GAM
Cobalt 60	10198-40-0	U		14	25	U	GAM
Ruthenium 106	13967-48-1	U		120		U	GAM
Antimony 125	14234-35-6	U		34		U	GAM
Cesium 137	10045-97-3	U		16	15	U	GAM
Radium 226	13982-63-3	U		32		U	GAM
Radium 228	15262-20-1	U		65		U	GAM
Europium 152	14683-23-9	U		36	50	U	GAM
Europium 154	15585-10-1	U		40	50	U	GAM
Europium 155	14391-16-3	U		33	50	U	GAM
Thorium 228	14274-82-9	U		22		U	GAM
Thorium 232	TH-232	U		65		U	GAM
Uranium 235	15117-96-1	U		51		U	GAM
Uranium 238	U-238	U		1600		U	GAM
Americium 241	14596-10-2	U		16		U	GAM

PFP Well Installation Smpl. & Anal.

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test AM Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241	
Preparation batch 7024-074						
B12XM2	R203011-01			7230-001	U	
B140B4	R203011-02			7230-002	U	
BLK (QC ID=41468)	R203011-04			7230-004	U	
LCS (QC ID=41467)	R203011-03			7230-003	ok	
Duplicate (R203011-01)	R203011-05			7230-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
PFP Well Installation Smpl. & Anal.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 074											
B12XM2	R203011-01			0.24	0.400			82		111			28	03/27/02	03/27	SS-031
B140B4	R203011-02			0.18	0.500			84		111			28	03/27/02	03/27	SS-032
BLK (QC ID=41468)	R203011-04			0.29	0.400			70		110				03/27/02	03/27	SS-040
LCS (QC ID=41467)	R203011-03			0.28	0.400			74		107				03/27/02	03/28	SS-043
Duplicate (R203011-01) (QC ID=41469)	R203011-05			0.38	0.400			53		109			28	03/27/02	03/27	SS-043
Nominal values and limits from method				1.0	0.400			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES				
MDA	0.27	±	0.15
YIELD	73	±	25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test NP Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

NEPTUNIUM IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Neptunium 237	
Preparation batch 7024-074						
B12XM2	R203011-01			7230-001	U	
B140B4	R203011-02			7230-002	U	
BLK (QC ID=41468)	R203011-04			7230-004	U	
LCS (QC ID=41467)	R203011-03			7230-003	ok	
Duplicate (R203011-01)	R203011-05			7230-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0	
PFP Well Installation Smpl. & Anal.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 074											
B12XM2	R203011-01			0.28	0.200			50		127			31	03/29/02	03/30	SS-043
B140B4	R203011-02			0.29	0.200			45		127			31	03/29/02	03/30	SS-044
BLK (QC ID=41468)	R203011-04			0.57	0.200			61		128				03/29/02	03/30	SS-047
LCS (QC ID=41467)	R203011-03			0.21	0.200			63		127				03/29/02	03/30	SS-045
Duplicate (R203011-01) (QC ID=41469)	R203011-05			0.75	0.200			47		128			31	03/29/02	03/30	SS-048
Nominal values and limits from method				1.0	0.200			20-105		100			180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.42	±	0.46
	YIELD	53	±	17

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test PU Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 7024-074								
B12XM2	R203011-01			7230-001	U		U	
B140B4	R203011-02			7230-002	U		U	
BLK (QC ID=41468)	R203011-04			7230-004	U		U	
LCS (QC ID=41467)	R203011-03			7230-003	ok		ok	
Duplicate (R203011-01)	R203011-05			7230-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0	
PFP Well Installation Smpl. & Anal.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 5.0 %				Reference Lab Notebook 7024 pg. 074											
B12XM2	R203011-01			0.22	0.400			88		110			28	03/27/02	03/27	SS-044
B140B4	R203011-02			0.19	0.500			84		110			28	03/27/02	03/27	SS-045
BLK (QC ID=41468)	R203011-04			0.23	0.400			96		111				03/27/02	03/27	SS-049
LCS (QC ID=41467)	R203011-03			0.27	0.400			74		111				03/27/02	03/27	SS-048
Duplicate (R203011-01) (QC ID=41469)	R203011-05			0.27	0.400			71		111			28	03/27/02	03/27	SS-050
Nominal values and limits from method				1.0	0.400			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	0.24	±	0.069
	YIELD	83	±	20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test U Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7024-074											
B12XM2	R203011-01			7230-001	1.04	U	0.742 J	140	69	8	8
B140B4	R203011-02			7230-002	1.10	U	0.658 J	167	80	9	9
BLK (QC ID=41468)	R203011-04			7230-004	U	U	U				
LCS (QC ID=41467)	R203011-03			7230-003	ok	ok	ok				
Duplicate (R203011-01)	R203011-05			7230-005	ok	- U	ok J	207	92	13	17
Nominal values and limits from method				RDLs (pCi/L)	1.0	1.0	1.0	100		4	
PFP Well Installation Smpl. & Anal.								Averages 171		10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074 2σ prep error 5.0 % Reference Lab Notebook 7024 pg. 074																
B12XM2	R203011-01			0.21	0.500			97		101			29	03/28/02	03/28	SS-031
B140B4	R203011-02			0.22	0.500			94		101			29	03/28/02	03/28	SS-032
BLK (QC ID=41468)	R203011-04			0.29	0.500			72		100				03/28/02	03/28	SS-039
LCS (QC ID=41467)	R203011-03			0.85	0.500			102		110				03/28/02	04/02	SS-040
Duplicate (R203011-01) (QC ID=41469)	R203011-05			0.21	0.500			102		100			29	03/28/02	03/28	SS-040
Nominal values and limits from method				1.0	0.500			30-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-910	Uranium Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.36 ± 0.56
YIELD 93 ± 25

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test SR Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN WATER

BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium	
Preparation batch 7024-074						
B12XM2	R203011-01			7230-001	U	
B140B4	R203011-02			7230-002	U	
BLK (QC ID=41468)	R203011-04			7230-004	U	
LCS (QC ID=41467)	R203011-03			7230-003	ok	
Duplicate (R203011-01)	R203011-05			7230-005	-	U
Nominal values and limits from method				RDLs (pCi/L)	2.0	
PFP Well Installation Smpl. & Anal.						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 10.0 % Reference Lab Notebook 7024 pg. 074															
B12XM2	R203011-01			0.64	0.500			97		100			27	03/26/02	03/26	GRB-229
B140B4	R203011-02			0.58	0.500			98		100			27	03/26/02	03/26	GRB-230
BLK (QC ID=41468)	R203011-04			0.66	0.500			88		100				03/26/02	03/26	GRB-232
LCS (QC ID=41467)	R203011-03			0.50	0.500			96		100				03/26/02	03/26	GRB-230
Duplicate (R203011-01) (QC ID=41469)	R203011-05			0.59	0.500			97		100			27	03/26/02	03/26	GRB-221
Nominal values and limits from method				2.0	0.500					100			180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-501 Strontium in Water Samples, rev 2

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 0.59 ± 0.12
YIELD 95 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test TC Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

TECHNETIUM 99 IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 7024-074						
B12XM2	R203011-01			7230-001	13.5	J
B140B4	R203011-02			7230-002	13.5	J
BLK (QC ID=41468)	R203011-04			7230-004	U	
LCS (QC ID=41467)	R203011-03			7230-003	ok	
Duplicate (R203011-01)	R203011-05			7230-005	ok	
Nominal values and limits from method				RDLs (pCi/L)	15	

PFP Well Installation Smpl. & Anal.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 10.0 %				Reference Lab Notebook 7024 pg. 074											
B12XM2	R203011-01			11	0.0500			90		50			38	04/02/02	04/06	GRB-218
B140B4	R203011-02			11	0.0500			92		50			37	04/02/02	04/05	GRB-218
BLK (QC ID=41468)	R203011-04			11	0.0500			95		50				04/02/02	04/05	GRB-220
LCS (QC ID=41467)	R203011-03			8.2	0.0500			97		74				04/02/02	04/09	GRB-222
Duplicate (R203011-01) (QC ID=41469)	R203011-05			11	0.0500			95		50			37	04/02/02	04/05	GRB-224
Nominal values and limits from method				15	0.0500			20-105		50			180			

PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
	CP-021	Preparation of Tc-99m Tracer, rev 1
	CP-002	Q.C. Preparation, rev 3
	CP-003	Tracing, rev 3
	CP-541	Technetium-99 Purification (Water) by Extraction Chromatography, rev 1
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	10	±	2.5
	YIELD	94	±	6

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test 93A Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 7024-074						
B12XM2	R203011-01	93		7230-001	U	
B140B4	R203011-02	93		7230-002	1.65	J
BLK (QC ID=41468)	R203011-04	93		7230-004	U	
LCS (QC ID=41467)	R203011-03	93		7230-003	ok	
Duplicate (R203011-01)	R203011-05	93		7230-005	-	U

Nominal values and limits from method RDLs (pCi/L) 3.0
PFP Well Installation Smpl. & Anal.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 20.0 % Reference Lab Notebook 7024 pg. 074															
B12XM2	R203011-01	93		1.8	0.300			105		100			27	03/26/02	03/26	GRB-101
B140B4	R203011-02	93		1.6	0.300			103		100			27	03/26/02	03/26	GRB-102
BLK (QC ID=41468)	R203011-04	93		0.89	0.300			22		100				03/26/02	03/26	GRB-106
LCS (QC ID=41467)	R203011-03	93		1.1	0.300			22		100				03/26/02	03/27	GRB-114
Duplicate (R203011-01) (QC ID=41469)	R203011-05	93		1.9	0.300			106		108			27	03/26/02	03/26	GRB-109
Nominal values and limits from method				3.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	1.5	±	0.89
	RESIDUE	72	±	91

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test 93B Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 7024-074					
B12XM2	R203011-01	93		7230-001	13.8
B140B4	R203011-02	93		7230-002	13.8
BLK (QC ID=41468)	R203011-04	93		7230-004	U
LCS (QC ID=41467)	R203011-03	93		7230-003	ok
Duplicate (R203011-01)	R203011-05	93		7230-005	ok
Nominal values and limits from method				RDLs (pCi/L)	4.0
PFP Well Installation Smpl. & Anal.					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 074															
B12XM2	R203011-01	93		1.9	0.300			105		100			27	03/26/02	03/26	GRB-101
B140B4	R203011-02	93		2.1	0.300			103		100			27	03/26/02	03/26	GRB-102
BLK (QC ID=41468)	R203011-04	93		2.9	0.300			22		100				03/26/02	03/26	GRB-106
LCS (QC ID=41467)	R203011-03	93		2.8	0.300			22		100				03/26/02	03/27	GRB-114
Duplicate (R203011-01) (QC ID=41469)	R203011-05	93		1.9	0.300			106		108			27	03/26/02	03/26	GRB-109
Nominal values and limits from method				4.0	0.300			5-250		100			180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES				
	MDA	2.3	±	0.98
	RESIDUE	72	±	91

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test GAM Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA EMITTERS
GAMMA SCAN

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 7024-074								
B12XM2	R203011-01			7230-001	U		U	
B140B4	R203011-02			7230-002	U		U	
BLK (QC ID=41468)	R203011-04			7230-004	U		U	
LCS (QC ID=41467)	R203011-03			7230-003	ok		ok	
Duplicate (R203011-01)	R203011-05			7230-005	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	25		15	
PFP Well Installation Smpl. & Anal.								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 15.0 % Reference Lab Notebook 7024 pg. 074															
B12XM2	R203011-01			45	0.500					306			30	03/28/02	03/29	01,01,00
B140B4	R203011-02			67	0.500					307			30	03/28/02	03/29	MB,07,00
BLK (QC ID=41468)	R203011-04			34	0.500					307				03/28/02	03/29	01,04,00
LCS (QC ID=41467)	R203011-03			32	0.500					306				03/28/02	03/29	01,03,00
Duplicate (R203011-01) (QC ID=41469)	R203011-05			83	0.500					317			30	03/28/02	03/29	MB,05,00
Nominal values and limits from method				15	0.500					100			180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD FOR 5 SAMPLES
MDA 52 ± 44
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1707

Test H Matrix WATER
SDG 7230
Contact Melissa C. Mannion

METHOD SUMMARY

TRITIUM IN WATER
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1707

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Tritium	
Preparation batch 7024-074						
B12XM2	R203011-01			7230-001	U	
B140B4	R203011-02			7230-002	U	
BLK (QC ID=41468)	R203011-04			7230-004	U	
LCS (QC ID=41467)	R203011-03			7230-003	ok	J
Duplicate (R203011-01)	R203011-05			7230-005	-	U
Spike (R203011-02)	R203011-06			7230-006	ok	X

Nominal values and limits from method RDLs (pCi/L) 400
PFP Well Installation Smpl. & Anal.

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7024-074	2σ prep error 10.0 %				Reference Lab Notebook 7024 pg. 074											
B12XM2	R203011-01			180	0.0100			100		100			38	03/28/02	04/06	LSC-007
B140B4	R203011-02			180	0.0100			100		100			30	03/28/02	03/29	LSC-007
BLK (QC ID=41468)	R203011-04			17	1.00			10		100				03/28/02	03/29	LSC-007
LCS (QC ID=41467)	R203011-03			17	1.00			10		100				03/28/02	03/29	LSC-007
Duplicate (R203011-01) (QC ID=41469)	R203011-05			180	0.0100			100		100			38	03/28/02	04/06	LSC-007
Spike (R203011-02) (QC ID=41470)	R203011-06			170	0.0300			33		100			30	03/28/02	03/29	LSC-007
Nominal values and limits from method				400	0.0100					25			180			

PROCEDURES REFERENCE 906.0_H3_LSC
CP-210 Tritium in Water Samples by Distillation, rev 5

AVERAGES ± 2 SD FOR 6 SAMPLES
MDA 120 ± 170
YIELD 59 ± 92

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 04/11/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-10	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: H1707 (7230) 200 West; Well Number C3803, Well Name 299-W15-42	SAF No.: B01-114	
Ice Chest No.: ERC-02-010	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/ERCRA TMA	Offsite Property No.: A020165	Bill of Lading/Air Bill No.: 7903 2586 1860	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per historical data

Special Handling and/or Storage
None

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo (RJN 2/22/02)	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo (RJN 4/5/02)	HNO3 to pH <2
Type of Container	P	P	P	G	P	P	P	aG	aGs*	P
No. of Container(s)	1	1	1	1	1	1	1	1	3	1
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.
B12XM2	WATER	2/27/02	1410	X ✓		X ✓	X (RJN 2/27/02)						X ✓

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: R Nielson	2/27/02 1623	Received By: S Dredlin REC #1A	2/27/02 1623
Relinquished By: R Nielson 1A 3728	2.28.02 0900	Received By: R.T. Thorson	2.28.02 0900
Relinquished By: R.T. Thorson ERC	2.28.02 0900	Received By: FED EX	2-28-02
Relinquished By: FED EXPRESS	3-01-02 10:00	Received By: E. Maestas E. MAESTAS	3-01-02 10:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

~~(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040~~
~~(2) ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc); ICP Metals - 6010A (Add-on) (Phosphorus)~~
~~(3) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
(4) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium

RT 2.28.02

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2.28.02

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By / Date/Time

BHI-EE-011 (10/99)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-48	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay — Telephone No.: 372-9100	Project Coordinator: TRENT, SJ	Price Code: 7N — Data Turnaround: 45 Days
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West H1707 (7230)	SAF No.: B01-114	Air Quality ☐
Ice Chest No.: ERC-02-010	Field Logbook No.: EL-1562-1 — COA: T20ZP1D722	Method of Shipment: Federal Express	
Shipped To: TMA/RECRA TMA	Offsite Property No.: A020165	Bill of Lading/Air Bill No.: 7403 2586-1850	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per historical data

Special Handling and/or Storage
None

Preservation	None	Cool 4C	HCl to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P	P	G	P	P	P	G	aGs*	P
No. of Container(s)	1	1	1	1	1	1	1	2	3	6
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.4	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B140B4	WATER	2/27/02	1410	X		X						X

RT 2-28-02

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R Nielson	2/27/02 1623	Stored in Ref #1A	2/27/02 1623
Ref 1A 3728	2-28-02 0900	R Thorenz	2-28-02 0900
R Thorenz ERC	2-28-02 0900	FEDEX	2-28-02
FED EXPRESS	3-01-02 10:00	E. Maestas E. MAESTAS	3-01-02 10:00

SPECIAL INSTRUCTIONS

RT 2-28-02

~~(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); pH (Water) - 9040~~
(2) ~~ICP Metals - 6010A (TAL) (Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc); ICP Metals - 6010A (Add-on) (Phosphorus)~~
(3) ~~Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)~~
(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec - Add-on (Antimony-125, Ruthenium-106); Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr; Isotopic Uranium

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT.
RT 2-28-02

Matrix *: S=Soil, SD=Sediment, SO=Solid, S=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 3-01-02 10:00

CoC No. B01-114-10 and B01-114-48.

Container I.D. No. ERC-02-010 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: 2
7. Number of containers per sample: PLS check (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____
13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____
14. Received by E. Maestas Date: 3-01-02 Time: 10:00

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____ Calibration date _____

Survey Meter Ser No. _____ Calibration date _____

RECEIVED
APR 2002

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1707

DATE RECEIVED: 03/02/02 LVL LOT # :0203L110

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B140B4	002	W	02LE0237	02/27/02	03/05/02	03/18/02
B140B4	002 MS	W	02LE0237	02/27/02	03/05/02	03/20/02
B140B4	002 MSD	W	02LE0237	02/27/02	03/05/02	03/20/02
B12XM2	003	W	02LE0237	02/27/02	03/05/02	03/20/02

LAB QC:

SBLKQY	MB1	W	02LE0237	N/A	03/05/02	03/18/02
SBLKQY	MB1 BS	W	02LE0237	N/A	03/05/02	03/18/02

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-114
LVL #: 0203L110
SDG/SAF #: H1707/B01-114

W.O. #: 11343-606-001-9999-00
Date Received: 03-02-2002

SEMIVOLATILE

Two (2) water samples were collected on 02-27-2002.

The samples and their associated QC samples were extracted on 03-05-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Tributylphosphate and TCL Semivolatile target compounds on 03-18,20-2002.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

2. Samples were extracted and analyzed within required holding time.

3. Non-target compounds were detected in the samples.

4. All surrogate recoveries were within EPA QC limits.

5. The blank spike sample was inadvertently not added with the spike compounds; consequently, the analysis was not reported. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. Five (5) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

7. Internal standard area and retention time criteria were met.

8. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor
President
Lionville Laboratory Incorporated

3/27/02
Date

som\gorup\data\bna\tnu-hanford-0203-110.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 6 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 02MS279

Initiator: Robert G. Cardley
Date: 3/21/02
Client: TMV Hanford

Batch: 02036110
Samples: BS
Method: SW846/MCAWW/CLP/

Parameter: 0625X
Matrix: WATER
Prep Batch: 02LE0237

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

No Spike recoveries in BS

MS/MSD ok

2. Known or Probable Causes(s) NOT SPIKED

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: Invalid

4. Project Manager Instructions...signature/date: _____

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	4	X MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

A = Indicates that a TIC is a suspected aldol-condensation product.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

LVLI
LIONVILLE LABORATORY INC

GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 03/26/02 10:01

RFW Batch Number: **0203L110** Client: **TNUHANFORD B01-114 H1707** Work Order: 11343606001 Page: 1a

	Cust ID:	B140B4		B140B4		B140B4		B12XM2		SBLKQY	
Sample Information	RFW#:	002		002 MS		002 MSD		003		02LE0237-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Nitrobenzene-d5	96	%	96	%	93	%	80	%	82	%
	2-Fluorobiphenyl	100	%	85	%	85	%	73	%	80	%
	p-Terphenyl-d14	123	%	107	%	88	%	94	%	95	%
	Phenol-d5	81	%	90	%	82	%	73	%	61	%
	2-Fluorophenol	85	%	87	%	85	%	69	%	80	%
	2,4,6-Tribromophenol	115	%	110	%	104	%	102	%	97	%
Phenol		11	U	83	%	80	%	10	U	10	U
bis(2-Chloroethyl)ether		11	U	22	U	22	U	10	U	10	U
2-Chlorophenol		11	U	88	%	84	%	10	U	10	U
1,3-Dichlorobenzene		11	U	22	U	22	U	10	U	10	U
1,4-Dichlorobenzene		11	U	70	%	70	%	10	U	10	U
1,2-Dichlorobenzene		11	U	22	U	22	U	10	U	10	U
2-Methylphenol		11	U	22	U	22	U	10	U	10	U
2,2'-oxybis(1-Chloropropane)		11	U	22	U	22	U	10	U	10	U
3- and/or 4-Methylphenol		11	U	22	U	22	U	10	U	10	U
N-Nitroso-Di-n-propylamine		11	U	83	%	77	%	10	U	10	U
Hexachloroethane		11	U	22	U	22	U	10	U	10	U
Nitrobenzene		11	U	22	U	22	U	10	U	10	U
Isophorone		11	U	22	U	22	U	10	U	10	U
2-Nitrophenol		11	U	22	U	22	U	10	U	10	U
2,4-Dimethylphenol		11	U	22	U	22	U	10	U	10	U
bis(2-Chloroethoxy)methane		11	U	22	U	22	U	10	U	10	U
2,4-Dichlorophenol		11	U	22	U	22	U	10	U	10	U
1,2,4-Trichlorobenzene		11	U	81	%	76	%	10	U	10	U
Naphthalene		11	U	22	U	22	U	10	U	10	U
4-Chloroaniline		11	U	22	U	22	U	10	U	10	U
Hexachlorobutadiene		11	U	22	U	22	U	10	U	10	U
4-Chloro-3-methylphenol		11	U	103 *	%	95	%	10	U	10	U
2-Methylnaphthalene		11	U	22	U	22	U	10	U	10	U
Hexachlorocyclopentadiene		11	U	22	U	22	U	10	U	10	U
2,4,6-Trichlorophenol		11	U	22	U	22	U	10	U	10	U
2,4,5-Trichlorophenol		28	U	56	U	56	U	25	U	25	U

*= Outside of EPA CLP QC limits.

Cust ID:	B140B4		B140B4		B140B4		B12XM2		SBLKQY	
RFW#:	002		002 MS		002 MSD		003		02LE0237-MB1	
2-Chloronaphthalene	11	U	22	U	22	U	10	U	10	U
2-Nitroaniline	28	U	56	U	56	U	25	U	25	U
Dimethylphthalate	4	J	3	J	3	J	3	J	10	U
Acenaphthylene	11	U	1	J	22	U	10	U	10	U
2,6-Dinitrotoluene	11	U	22	U	22	U	10	U	10	U
3-Nitroaniline	28	U	56	U	56	U	25	U	25	U
Acenaphthene	11	U	79	%	79	%	10	U	10	U
2,4-Dinitrophenol	28	U	56	U	56	U	25	U	25	U
4-Nitrophenol	28	U	116 *	%	115 *	%	25	U	25	U
Dibenzofuran	11	U	22	U	22	U	10	U	10	U
2,4-Dinitrotoluene	11	U	105 *	%	102 *	%	10	U	10	U
Diethylphthalate	11	U	22	U	22	U	10	U	10	U
4-Chlorophenyl-phenylether	11	U	22	U	22	U	10	U	10	U
Fluorene	11	U	22	U	22	U	10	U	10	U
4-Nitroaniline	28	U	56	U	56	U	25	U	25	U
4,6-Dinitro-2-methylphenol	28	U	56	U	56	U	25	U	25	U
N-Nitrosodiphenylamine (1)	11	U	22	U	22	U	10	U	10	U
4-Bromophenyl-phenylether	11	U	22	U	22	U	10	U	10	U
Hexachlorobenzene	11	U	22	U	22	U	10	U	10	U
Pentachlorophenol	28	U	103	%	102	%	25	U	25	U
Phenanthrene	11	U	22	U	22	U	10	U	10	U
Anthracene	11	U	22	U	22	U	10	U	10	U
Carbazole	11	U	22	U	22	U	10	U	10	U
Di-n-Butylphthalate	0.6	J	22	U	22	U	10	U	10	U
Fluoranthene	11	U	22	U	22	U	10	U	10	U
Pyrene	11	U	100	%	97	%	10	U	10	U
Butylbenzylphthalate	11	U	22	U	22	U	10	U	10	U
3,3'-Dichlorobenzidine	11	U	22	U	22	U	10	U	10	U
Benzo(a)anthracene	11	U	22	U	22	U	10	U	10	U
Chrysene	11	U	22	U	22	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	0.7	J	22	U	22	U	10	U	10	U
Di-n-Octyl phthalate	11	U	22	U	22	U	10	U	10	U
Benzo(b)fluoranthene	11	U	22	U	22	U	10	U	10	U
Benzo(k)fluoranthene	11	U	22	U	22	U	10	U	10	U
Benzo(a)pyrene	11	U	22	U	22	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	11	U	22	U	22	U	10	U	10	U
Dibenzo(a,h)anthracene	11	U	22	U	22	U	10	U	10	U
Benzo(g,h,i)perylene	11	U	22	U	22	U	10	U	10	U
Tributylphosphate	11	U	22	U	22	U	10	U	10	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B140B4

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-114 H1707

Matrix: (soil/water) WATER

Lab Sample ID: 0203L110-002

Sample wt/vol: 900 (g/mL) ML

Lab File ID: D031816

Level: (low/med) LOW

Date Received: 03/02/02

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 03/05/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 03/18/02

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.624	3	J
2. 314-40-9	BROMACIL	20.985	6	NJ
3.	UNKNOWN	39.098	4	JB

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B12XM2

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-114 H1707

Matrix: (soil/water) WATER

Lab Sample ID: 0203L110-003

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: D032006

Level: (low/med) LOW

Date Received: 03/02/02

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 03/05/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 03/20/02

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 314-40-9	BROMACIL	20.537	6	NJ

FORM 1 SV-TIC RFW (v3.3)

10

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKQY

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-114 H1707

Matrix: (soil/water) WATER

Lab Sample ID: 02LE0237-MB1

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: D031814

Level: (low/med) LOW

Date Received: 03/05/02

% Moisture: _____ decanted: (Y/N)__

Date Extracted: 03/05/02

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 03/18/02

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	13.711	2	J
2.	UNKNOWN	39.109	8	J

Lionville Laboratory Use Only

0203L110

Custody Transfer Record/Lab Work Request

Page 1 of ___

LVLI Lionville Laboratory Inc.

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford SAF # B01-114

Est. Final Proj. Sampling Date: ___

Project #: 11343-606-001-9999-00

Project Contact/Phone #: ___

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 3-2-02 Date Due: 4-1-02

		A-C	D,E						F		G	H	I	J		
Refrigerator #		1	4						4		4	1	4	4		
#/Type Container	Liquid	3pg	2pg						1p		1p	1pg	1p	1p		
	Solid	1	2													
Volume	Liquid	40	1L						500		250	500	500	500		
	Solid															
Preservatives		HCL/H2SO4	—						HNO3		—	HCL H2SO4	—	HCL H2SO4		
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Alk.	TIC TOC	IC Anions	NO2, NO3		
		Lionville Laboratory Use Only														
		0624X	0625X						METO		IALKL	ITIC IOCT	IC① IPH	IN3N2		

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X	METO	IALKL	ITIC IOCT	IC① IPH	IN3N2
001	B144H9			W	2/27/02	0723	X						
002	B140B4			↓	↓	1410	X	X	X	X	X	X	X
003	B12Xm2			↓	↓	↓	X	X	X	X	X	X	X

Special Instructions: SAF # B01-114

Run Matrix QC

DATE/REVISIONS:

METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P

IC① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

3. ___

4. ___

5. ___

6. ___

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___

Airbill # 7903 2587 6820

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 2.6 °C

pH IC #01/02/04

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

Relinquished by	Received by	Date	Time
Hea Ex	[signature]	3/2/02	10:55

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bec[redacted] Hanford Inc.

CHAIN OF CUSTODY/S[redacted]IPLE ANALYSIS REQUEST

B01-114-53 | Pa[redacted] of 1

Collector Renee Nielson	**Company Contact** Virginia Rohay	**Telephone No.** 372-9100	**Project Coordinator** TRENT, SJ
Project Designation PFP Well Installation Sampling and Analysis - Water	**Sampling Location** 200 West		**SAF No.** B01-114
Ice Chest No. ERC-02-005	**Field Logbook No.** EL-1562-1	**COA** T20ZP1D722	**Method of Shipment** Federal Express
Shipped To TMA/RECRA RECRA	**Offsite Property No.** A020193		**Bill of Lading/Air Bill No.** 79032587-6820

Price Code 7N **Data Turnaround** 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 PCI/g per historical Data

Special Handling and/or Storage
Cool 4C

Preservation	HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time										
B144H9	WATER	2/27/02	0723	X									

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson R. Nielson	2/27/02 1623	REF # 1A	2/27/02 1623
Ref 1A 3728	2.28.02 0900	R L Thorne	2.28.02 0900
R L Thorne ERC	2.28.02 0900	FED EX	
Fed Ex	3.2.02 10:55	[illegible]	3.2.02 10:55
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2.28.02

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (12/31/2001)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-48	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West		SAF No.: B01-114
Ice Chest No.: ERC-02-005	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA	Offsite Property No.: A02016593		Bill of Lading/Air Bill No.: 49032587-6820

Price Code: 7N

Air Quality ☐

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS: <2000 pCi/g. Per historical Data

Special Handling and/or Storage: Cool 4C

Preservation	None	Cool 4C	HCl or HNO3 to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH
Type of Container	P	P	P	G	P	P	P	aG	aGs*	
No. of Container(s)	1	1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B140B4	WATER	2/27/02	1410		X		X	X	X	X	X	X	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson 2-27-02	1623	Stored in REF # 1A	2/27/02 1623
Removed from Ref 1A 3728	2-28-02 0400	R. Thoren	2-28-02 0900
R. Thoren ERC	2-28-02 0900	FED EX	
Fed Ex	3-2-02 10:55		3-2-02 10:55

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium~~

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT.

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-114-10 Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42		SAF No.: B01-114
Ice Chest No.: ERC-02-005	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA RECRA RECRA	Offsite Property No.: A020193		Bill of Lading/Air Bill No.: ~~7911 7688 3488~~ 7903 2587 1620 RT 2.28.02

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per historical Data.

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2-28-02

Preservation	None RT 2-28-02	Cool 4C	HCl or HNO3 to pH <2 RT 2-28-02	HCl or H2SO4 to pH <2 Coo RJN 2/27/02	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or ~~H2SO4~~ to pH <2 Coo RJN 11/5/01	HNO3 to pH RT 2-28-02
Type of Container	P	P	P	aG	P	P	P	aG	aGs*	
No. of Container(s)		1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM2	WATER	2/27/02	1410		X		X	X	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	2/27/02 1623	Stored in Ref # 1A	2/27/02 1623
Removed from Ref # 1A 3728	2.28.02 0900	R Thoren	2.28.02 0900
R Thoren ERC	2.28.02 0900	FEDEX	
Fed Ex	3.2.02 10:55		3.2.02 10:55

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 - Total Sr; Isotopic Uranium~~ RT 2.28.02

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: Tru Hanford

Purchase Order/Project:

DATE: 3.2.02

SAF# / SOW# / Release #: B01-114

Laboratory SDG #: 0203L110

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☑ No	☐ N/A	☐ see Comment #
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc faxed or emailed to client?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp and Comments:

ERC 02.005 / 2.6°C

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

RECEIVED
APR 2002

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B01-114, H 1707

RFW LOT # :02031110

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B144H9	001	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02
B144H9	001 MS	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02
B144H9	001 MSD	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02
B140B4	002	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02
B140B4	002 D1	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02
B12XM2	003	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02
B12XM2	003 D1	W	02LVG056	02/27/02	03/02/02	N/A	03/11/02

LAB QC:

VBLKOJ	MB1	W	02LVG056	N/A	N/A	N/A	03/11/02
VBLKOJ	MB1 BS	W	02LVG056	N/A	N/A	N/A	03/11/02

gal 03-21-02

1

LIONVILLE LABORATORY INC.

Client: TNU-HANFORD B01-114
LVL #: 0203L110
SDG/SAF #: H1707/B01-114

W.O. #: 11343-606-001-9999-00
Date Received: 03-02-2002

GC/MS VOLATILE

Three (3) water samples were collected on 02-27-2002.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 03-11-2002.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. The required analysis holding time was met.
3. Non-target compounds were not detected in the samples.
4. Samples E140B4 and B12XM2 required a 10-fold dilution due to high levels of target compounds.
5. All surrogate recoveries were within EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.
7. All blank spike recoveries were within EPA QC limits.
8. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
9. Internal standard area and retention time criteria were met.
10. The analyses were performed with the method enhancement of a 40°C heated purge to standardize the purge temperature and improve overall purging efficiency.
11. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor
President
Lionville Laboratory Incorporated

3/27/02
Date

som\group\data\voa\tnu-hanford\0203-110.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 4 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF VOA DATA

DATA QUALIFIERS

U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.

J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

D = Identifies all compounds identified in an analysis at a secondary dilution factor.

I = Interference.

NQ = Result qualitatively confirmed but not able to quantify.

N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.

X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).

Y = Additional qualifiers used as required are explained in the case narrative.

VLI
LIONVILLE LABORATORY INC

GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

MP - Missed Peak: manually added peak not found by automatic quantitation program.

PA - Peak Assignment: quantitation report was changed to reflect correct peak assignment.

RI - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.

SP - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.

CB - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.

PI - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 03/21/02 10:52

RFW Batch Number: **0203L110** Client: **TNUHANFORD B01-114 H1707** Work Order: 11343606001 Page: 1a

	Cust ID:	B144H9		B144H9		B144H9		B140B4		B140B4		B12XM2	
Sample Information	RFW#:	001		001 MS		001 MSD		002		002 DL		003	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		10.0		1.00	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	98	%	95	%	103	%	100	%	102	%	101	%
	Bromofluorobenzene	106	%	106	%	104	%	102	%	101	%	104	%
	1,2-Dichloroethane-d4	94	%	93	%	101	%	97	%	100	%	101	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	100	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	100	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	100	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	100	U	10	U
Methylene Chloride		5	U	5	U	3	JB	5	JB	50	U	5	U
Acetone		10	U	10	U	10	U	10	U	100	U	10	U
Carbon Disulfide		5	U	5	U	5	U	5	U	50	U	5	U
1,1-Dichloroethene		5	U	85	%	87	%	5	U	50	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	50	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	50	U	5	U
Chloroform		5	U	5	U	5	U	33		34	JD	34	
1,2-Dichloroethane		5	U	5	U	5	U	5	U	50	U	5	U
2-Butanone		10	U	10	U	10	U	10	U	100	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	50	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	2000	E	1700	D	2200	E
Bromodichloromethane		5	U	5	U	5	U	5	U	50	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	50	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	50	U	5	U
Trichloroethene		5	U	86	%	90	%	2	J	50	U	2	J
Dibromochloromethane		5	U	5	U	5	U	5	U	50	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	50	U	5	U
Benzene		5	U	89	%	92	%	5	U	50	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	50	U	5	U
Bromoform		5	U	5	U	5	U	5	U	50	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	100	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	100	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	50	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	50	U	5	U
Toluene		5	U	99	%	102	%	5	U	50	U	5	U

*= Outside of EPA CLP QC limits.

Cust ID:	B144H9	B144H9	B144H9	B140B4	B140B4	B12XM2
RFW#:	001	001 MS	001 MSD	002	002 DL	003
Chlorobenzene	5 U	99 %	103 %	5 U	50 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	50 U	5 U
Styrene	5 U	5 U	5 U	5 U	50 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	50 U	5 U
N-butylbenzene	5 U	5 U	5 U	5 U	50 U	5 U

*= Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Volatiles By GC/MS, Special List

Report Date: 03/21/02 10:52

RFW Batch Number: **0203L110** Client: **TNUHANFORD B01-114 H1707** Work Order: 11343606001 Page: 2a

	Cust ID:	**B12XM2**		**VBLKOJ**		**VBLKOJ BS**	
Sample Information	RFW#:	**003 DL**		**02LVG056-MB1**		**02LVG056-MB1**	
	Matrix:	WATER		WATER		WATER	
	D.F.:	10.0		1.00		1.00	
	Units:	ug/L		ug/L		ug/L	
Surrogate Recovery	Toluene-d8	103	%	100	%	98	%
	Bromofluorobenzene	100	%	110	%	110	%
	1,2-Dichloroethane-d4	106	%	95	%	95	%
Chloromethane		100	U	10	U	10	U
Bromomethane		100	U	10	U	10	U
Vinyl Chloride		100	U	10	U	10	U
Chloroethane		100	U	10	U	10	U
Methylene Chloride		50	U	5	J	5	B
Acetone		100	U	10	U	10	U
Carbon Disulfide		50	U	5	U	5	U
1,1-Dichloroethene		50	U	5	U	82	%
1,1-Dichloroethane		50	U	5	U	5	U
1,2-Dichloroethene (total)		50	U	5	U	5	U
Chloroform		32	JD	5	U	5	U
1,2-Dichloroethane		50	U	5	U	5	U
2-Butanone		100	U	10	U	10	U
1,1,1-Trichloroethane		50	U	5	U	5	U
Carbon Tetrachloride		1800	D	5	U	5	U
Bromodichloromethane		50	U	5	U	5	U
1,2-Dichloropropane		50	U	5	U	5	U
cis-1,3-Dichloropropene		50	U	5	U	5	U
Trichloroethene		50	U	5	U	89	%
Dibromochloromethane		50	U	5	U	5	U
1,1,2-Trichloroethane		50	U	5	U	5	U
Benzene		50	U	5	U	89	%
Trans-1,3-Dichloropropene		50	U	5	U	5	U
Bromoform		50	U	5	U	5	U
4-Methyl-2-pentanone		100	U	10	U	10	U
2-Hexanone		100	U	10	U	10	U
Tetrachloroethene		50	U	5	U	5	U
1,1,2,2-Tetrachloroethane		50	U	5	U	5	U
Toluene		50	U	5	U	101	%

*= Outside of EPA CLP QC limits.

Cust ID:	B12XM2		VBLKOJ		VBLKOJ BS	
RFW#:	003 DL		02LVG056-MB1		02LVG056-MB1	
Chlorobenzene	50	U	5	U	101	%
Ethylbenzene	50	U	5	U	5	U
Styrene	50	U	5	U	5	U
Xylene (total)	50	U	5	U	5	U
N-butylbenzene	50	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Lionville Laboratory Use Only

0203L110

Custody Transfer Record/Lab Work Request

Page 1 of ___

LVLI Lionville Laboratory Inc

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford SAF # B01-114

Est. Final Proj. Sampling Date: ___

Project #: 11343-606-001-9999-00

Project Contact/Phone #: ___

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 3-2-02 Date Due: 4-1-02

		A-C	D,E						F		G	H	I	J		
Refrigerator #		1	4						4		4	1	4	4		
#/Type Container	Liquid	3aq	2aq						1p		1p	1aq	1p	1p		
	Solid	1	0													
Volume	Liquid	40	1L						500		250	500	500	500		
	Solid															
Preservatives		HCL/H2SO4	—						HNO3		—	HCL H2SO4	—	HCL H2SO4		
ANALYSES REQUESTED		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Alk.	TIC TOC	IC Anions	NO2, NO3		

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB	Herb				Metal	CN	Alk.	TIC TOC	IC Anions	NO2, NO3		
							Lionville Laboratory Use Only														
							0624X	0625X						METO		IALKL	TIC TOC	IC IPH	IN3N2		
001	B144H9			W	2/27/02	0723	X														
002	B140B4			⊥	⊥	1410	X	X						X		X	X	X	X		
003	B12Xm2			⊥	⊥	⊥	X	X						X		X	X	X	X		

Special Instructions: SAF # B01-114

Run Matrix QC

DATE/REVISIONS:

METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P

IC ① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

3. ___

4. ___

5. ___

6. ___

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 7903 2587 6820
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 2.6 °C

pH IC #01/002/004

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

Relinquished by	Received by	Date	Time
Fed Ex	[signature]	3/2/02	10:55

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bec[redacted] Hanford Inc.	CHAIN OF CUSTODY/S[redacted]PLE ANALYSIS REQUEST	B01-114-53	Pa[redacted] of 1

Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ
Project Designation PFP Well Installation Sampling and Analysis - Water	Sampling Location 200 West		SAF No. B01-114
Ice Chest No. ERC-02-005	Field Logbook No. EL-1562-1	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA RECRA RECRA	Offsite Property No. A020143		Bill of Lading/Air Bill No. 79032587-6820

Price Code 7N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 PCI/g Per historical Data

Special Handling and/or Storage
COOL 4C

Preservation	HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) {n-Butylbenzene}										

Sample No.	Matrix *	Sample Date	Sample Time										
B144H9	WATER	2/27/02	0723	X									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson	2/27/02 1623	REF # 1A	2/27/02 1623
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 1A 3728	2.28.02 0400	R. Thorson	2.28.02 0400
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Thorson ERC	2.28.02 0400	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	3.2.02 1055	[illegible]	3.2.02 10:55
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2.27.02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2.28.02 FOR SHIPMENT. RT 2.28.02

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	*Disposal Method*	Disposed By	Date/Time

BHI-EE-011 (12/31/2001)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-48	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC-02-005	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA (RECRA)	Offsite Property No.: A02016593		Bill of Lading/Air Bill No.: 9903258 7-6820

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g. Per historical Data

Special Handling and/or Storage
Cool 4C

Preservation	RT	Cool 4C	HCl or H2SO4 to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH <2
Type of Container	P	P	P	G	P	P	P	aG	aGs*	
No. of Container(s)	1	1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.
Sample No.	Matrix *	Sample Date	Sample Time							
B140B4	WATER	2/27/02	1410		X		X	X	X	X	X	X	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: Renee Nielson / R. Nielson 2-27-02	1623	Received By: Stored in REF #A	2/27/02 1623
Relinquished By: Removed from REF 1A 5728	2-28-02 0400	Received By: R. Thoren	2-28-02 0400
Relinquished By: R. Thoren ERC	2-28-02 0900	Received By: FED EX	
Relinquished By: Fed Ex	3-2-02 10:55	Received By: [illegible]	3-2-02 10:55
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(4) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec. Add-on (Antimony-125, Ruthenium-106); Americium-241, Neptunium-237, Isotopic Plutonium, Strontium-89,90 -- Total Sr; Isotopic Uranium~~

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT.

Matrix *
S=Soil
SB=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector Renee Nielson	**Company Contact** Virginia Rohay **Telephone No.** 372-9100	**Project Coordinator** TRENT, SJ	**Price Code** 7N **Data Turnaround** 45 Days
Project Designation PFP Well Installation Sampling and Analysis - Water	**Sampling Location** 200 West; Well Number C3803, Well Name 299-W15-42	**SAF No.** B01-114	**Air Quality** ☐
Ice Chest No. ERC-02-005	**Field Logbook No.** EL-1562-1 / **COA** T20ZP1D722	**Method of Shipment** Federal Express	
Shipped To TMA/RECRA RECRA	**Offsite Property No.** A020193	**Bill of Lading/Air Bill No.** ~~7917688-3488~~ 7903 2587-6820 RT 2.28.02	

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per historical Data.

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2.28.02

Preservation	RT 2.28.02	Cool 4C	RT 2.28.02	RJN 2/27/02 HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	RJN 11/5/01 HCl or ~~H2SO4~~ to pH <2 Coo	HNO3 to pH RT 2.28.02
Type of Container		P	P	aG	P	P	P	aG	aGs*	
No. of Container(s)		1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM2	WATER	2/27/02	1410		X		X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By R. Nielson	Date/Time 2/27/02 1623	Received By Stored in REF# 1A	Date/Time 2/27/02 1623
Relinquished By Remo Sedman Ruk 1A 3728	Date/Time 2.28.02 0900	Received By R. Thoren	Date/Time 2.28.02 0900
Relinquished By R. Thoren ERC	Date/Time 2.28.02 0900	Received By FEDEX	Date/Time
Relinquished By Fed Ex	Date/Time 3.2.02 10:55	Received By	Date/Time 3.2.02 10:55
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec. Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-90,90 -- Total Sr; Isotopic Uranium~~

RT 2.28.02

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: Tru Hanford

Purchase Order/Project:

DATE: 3.2.02

SAF# / SOW# / Release #: B01-114

Laboratory SDG #: 0203L110

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☑ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc faxed or emailed to client?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp and Comments:

ERC.02.0005 / 2.6°C

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

C4

RECEIVED
APR 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1707

DATE RECEIVED: 03/02/02 LVL LOT # :0203L110

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B140B4						
CALCIUM, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
CALCIUM, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
CADMIUM, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
CADMIUM, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
CHROMIUM, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
CHROMIUM, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
IRON, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
IRON, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
MAGNESIUM, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
MAGNESIUM, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
SODIUM, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
SODIUM, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
NICKEL, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
NICKEL, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
PHOSPHORUS, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
PHOSPHORUS, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
ZINC, TOTAL	002	W	02L0127	02/27/02	03/14/02	03/20/02
ZINC, TOTAL	002 REP	W	02L0127	02/27/02	03/14/02	03/20/02
B12XM2						
CALCIUM, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
CALCIUM, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
CADMIUM, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
CADMIUM, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
CHROMIUM, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
CHROMIUM, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
IRON, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
IRON, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
MAGNESIUM, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
MAGNESIUM, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
SODIUM, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
SODIUM, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
NICKEL, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
NICKEL, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1707

DATE RECEIVED: 03/02/02 LVL LOT # :0203L110

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHORUS, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
PHOSPHORUS, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02
ZINC, TOTAL	003	W	02L0127	02/27/02	03/14/02	03/20/02
ZINC, TOTAL	003 MS	W	02L0127	02/27/02	03/14/02	03/20/02

LAB QC:

CALCIUM LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
CALCIUM, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
CADMIUM LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
CADMIUM, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
CHROMIUM LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
CHROMIUM, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
IRON LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
IRON, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
MAGNESIUM LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
MAGNESIUM, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
SODIUM LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
SODIUM, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
NICKEL LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
NICKEL, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
PHOSPHORUS LCS	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
PHOSPHORUS, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02
ZINC LABORATORY	LC1 BS	W	02L0127	N/A	03/14/02	03/19/02
ZINC, TOTAL	MB1	W	02L0127	N/A	03/14/02	03/19/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B01-114
LVL#: 0203L110
SDG/SAF#: H1707/B01-114

W.O.#: 11343-606-001-9999-00
Date Received: 03-02-02

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 water samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Zinc was greater than the Practical Quantitation Limit (PQL) and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

03-21-02
Date

jjw/m03-110

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this
Lot#: 0203L110

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: X3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	__6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	__6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	X6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	X6010B		__200.7				__99
Chromium	X6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	X6010B		__200.7				__99
Lead	__6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	X6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	__7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	X6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	__6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	__6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	X6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2__200.9			__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	X6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other: X Phosphorous Method: 6010B

L-WI-033/M-03/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/21/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B140B4	Calcium, Total	72500	UG/L	10.3	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	6.5	UG/L	0.80	1.0
		Iron, Total	343	UG/L	15.0	1.0
		Magnesium, Total	22900	UG/L	9.2	1.0
		Sodium, Total	23100	UG/L	5.8	1.0
		Nickel, Total	3.7	UG/L	1.2	1.0
		Phosphorus, Total	91.9	UG/L	14.4	1.0
		Zinc, Total	2.5	UG/L	0.40	1.0
-003	B12XM2	Calcium, Total	72300	UG/L	10.3	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	7.3	UG/L	0.80	1.0
		Iron, Total	378	UG/L	15.0	1.0
		Magnesium, Total	23000	UG/L	9.2	1.0
		Sodium, Total	23300	UG/L	5.8	1.0
		Nickel, Total	3.0	UG/L	1.2	1.0
		Phosphorus, Total	90.8	UG/L	14.4	1.0
		Zinc, Total	2.2	UG/L	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/21/02

CLIENT: TNUHANFORD B01-114 H1707

WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0203L110

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0127-MB1	Calcium, Total	10.8		UG/L	10.3	1.0
		Cadmium, Total	0.30	u	UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Iron, Total	15.0	u	UG/L	15.0	1.0
		Magnesium, Total	9.2	u	UG/L	9.2	1.0
		Sodium, Total	7.2		UG/L	5.8	1.0
		Nickel, Total	1.2	u	UG/L	1.2	1.0
		Phosphorus, Total	14.4	u	UG/L	14.4	1.0
		Zinc, Total	1.9		UG/L	0.40	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/21/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	B12XM2	Calcium, Total	97700	72300	25000	101.5	1.0
		Cadmium, Total	47.2	0.30u	50.0	94.4	1.0
		Chromium, Total	196	7.3	200	94.2	1.0
		Iron, Total	1330	378	1000	94.8	1.0
		Magnesium, Total	47400	23000	25000	97.8	1.0
		Sodium, Total	45700	23300	25000	89.7	1.0
		Nickel, Total	473	3.0	500	94.1	1.0
		Phosphorus, Total	4560	90.8	5000	89.4	1.0
		Zinc, Total	484	2.2	500	96.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/21/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B140B4	Calcium, Total	72500	72400	0.22	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	6.5	7.2	10.2	1.0
		Iron, Total	343	368	6.9	1.0
		Magnesium, Total	22900	22800	0.25	1.0
		Sodium, Total	23100	23000	0.23	1.0
		Nickel, Total	3.7	4.0	7.8	1.0
		Phosphorus, Total	91.9	85.9	6.7	1.0
		Zinc, Total	2.5	2.1	17.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/21/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0127-LC1	Calcium, LCS	23800	25000	UG/L	95.3
		Cadmium, LCS	24	250	UG/L	96.4
		Chromium, LCS	481	500	UG/L	96.4
		Iron, LCS	4790	5000	UG/L	95.9
		Magnesium, LCS	24600	25000	UG/L	98.4
		Sodium, LCS	24000	25000	UG/L	96.0
		Nickel, LCS	1950	2000	UG/L	97.5
		Phosphorus, LCS	4880	5000	UG/L	97.6
		Zinc, LCS	969	1000	UG/L	96.9

Lionville Laboratory Use Only

0203L110

Custody Transfer Record/Lab Work Request

Page 1 of ___

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVL Lionville Laboratory Inc

Client: TNU Hamilton SAF # B01-114

Est. Final Proj. Sampling Date: ___

Project #: 11343-606-001-9999-00

Project Contact/Phone #: ___

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 3-2-02 Date Due: 4-1-02

		A-C	D,E						F		G	H	I	J		
Refrigerator #		1	4						4		4	1	4	4		
#/Type Container	Liquid	3aq	2aq						1p		1p	1aq	1p	1p		
	Solid	1	2													
Volume	Liquid	40	1L						500		250	500	500	500		
	Solid															
Preservatives		HCL/H2SO4	—						HNO3		—	HCL H2SO4	—	HCL H2SO4		
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Alk.	TIC TOC	IC Anions	NO2, NO3		
		Lionville Laboratory Use Only														
		0624X	0625X						METO		IHCL	ITIC IOCT	IC ① IPH	IN3N2		

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624X	0625X	METO	IHCL	ITIC IOCT	IC ① IPH	IN3N2
001	B144H9			W	2/27/02	0723	X						
002	B140B4			↓	↓	1410	X	X	X	X	X	X	X
003	B12Xm2			↓	↓	↓	X	X	X	X	X	X	X

Special Instructions: SAF # B01-114

Run Matrix QC

DATE/REVISIONS:

METO 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P

IC ① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

3. ___

4. ___

5. ___

6. ___

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	3/2/02	10:55

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 7903 2587 6820
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

pH ZC ①/IOCL/PO4

Cooler Temp. 2.6 °C

Bec[redacted] Hanford Inc.	CHAIN OF CUSTODY/S[redacted]PLE ANALYSIS REQUEST	B01-114-53	Pa[redacted] of [redacted]

Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ
Project Designation PFP Well Installation Sampling and Analysis - Water	Sampling Location 200 West		SAF No. B01-114
Ice Chest No. ERC-02-005	Field Logbook No. EL-1562-1	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA Recra	Offsite Property No. A020193		Bill of Lading/Air Bill No. 79032587-6820

Price Code 7N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 PCI/g Per historical Data

Special Handling and/or Storage
Cool 4C

Preservation	HCl or H2SO4 to pH <2 Coo										
Type of Container	aGs*										
No. of Container(s)	3										
Volume	40mL										
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)										

Sample No.	Matrix *	Sample Date	Sample Time	[redacted]
B144H9	WATER	2/27/02	1523	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.Nielson	2/27/02 1623	Ref #1A	2/27/02 1623
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref 1A 3728	2.28.02 0900	R.Thorne	2.28.02 0900
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.Thorne ERC	2.28.02 0900	FED ex	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Fed Ex	3.2.02 10:55	[illegible]	3.2.02 10:55
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2.28.02

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (12/31/2001)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-48	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC-02-005	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECRA	Offsite Property No.: A D2016593		Bill of Lading/Air Bill No.: 79032587-6820

POSSIBLE SAMPLE HAZARDS/REMARKS: <2000 pCi/g. Per historical Data

Special Handling and/or Storage: Cool 4C

Preservation	RT 2.28.02	Cool 4C	HCl or HNO3 pH <2 RT 2.28.02	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH RT 2.28.02
Type of Container		P	P	G	P	P	P	aG	aGs*	
No. of Container(s)	1	1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B140B4	WATER	2/27/02	1410		X		X	X	X	X	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By: RNielson 2-27-02	1623	Received By: Stone 1 Ref #1A 2/27/02	1623
Relinquished By: Remove from Ref 1A 3728 2.28.02	0900	Received By: RT RThoren 2.28.02	0900
Relinquished By: RT RThoren ERC 2.28.02	0900	Received By: FED EX	
Relinquished By: Fed Ex	3.2.02 10:55	Received By: [illegible]	3.2.02 10:55
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(4) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma-Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium~~ RT 2.28.02

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2.28.02

Matrix *: S=Soil; SD=Sediment; SO=Solid; S=Sludge; W=Water; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; W2=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

14

Collector	Company Contact	Telephone No.	Project Coordinator	Price Code	Data Turnaround
Renee Nielson	Virginia Rohay	372-9100	TRENT, SJ	7N	45 Days

Project Designation	Sampling Location	SAF No.	Air Quality
PFP Well Installation Sampling and Analysis - Water	200 West; Well Number C3803, Well Name 299-W15-42	B01-114	☐

Ice Chest No.	Field Logbook No.	COA	Method of Shipment
ERC-02-005	EL-1562-1	T20ZP1D722	Federal Express 7403 2587-1620

Shipped To	Offsite Property No.	Bill of Lading/Air Bill No.
TMA RECRA RECWA	A020193	~~7411 7688 3488~~ RT 2.28.02

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per historical Data.

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2.28.02

Preservation	RT 2.28.02	Cool 4C	HCl or H2SO4 to pH <2 RT 2.28.02	HCl or H2SO4 to pH <2 Coo RJN 2/22/02	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo RJN 11/5/01	HNO3 to pH RT 2.28.02
Type of Container		P	P	aG	P	P	P	aG	aGs*	
No. of Container(s)		1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									
B12XM2	WATER	2/27/02	1410		X		X	X	X	X	X	X

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By	R. Nielson	2/27/02 1623	Storedin REF # 1A	2/27/02 1623
Relinquished By	Removed from REF # 1A 3728	2.28.02 0900	Received By R Thoren	2.28.02 0900
Relinquished By	R Thoren ERC	2.28.02 0900	Received By FEDEX	Date/Time
Relinquished By	Fed Ex	3.2.02 10:55	Received By	3.2.02 10:55
Relinquished By		Date/Time	Received By	Date/Time
Relinquished By		Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium~~

RT 2.28.02

Matrix *
S=Soil
SD=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: Tru Hanford

Purchase Order/Project:

DATE: 3-2-02

SAF# / SOW# / Release #: B01-114

Laboratory SDG #: 0203L110

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☑ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc faxed or emailed to client?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp and Comments:

ERC-02-005 / 2.6°C

Laboratory Sample Custodian: [signature]

Laboratory Project Manager:

RECEIVED
APR 2002

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1707

DATE RECEIVED: 03/02/02 LVL LOT # :0203L110

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B140B4							
ALKALINITY	002	W	02LAK009	02/27/02	03/06/02	03/06/02	
ALKALINITY	002 REP	W	02LAK009	02/27/02	03/06/02	03/06/02	
CHLORIDE BY IC	002	W	02LIC019	02/27/02	03/05/02	03/05/02	
CHLORIDE BY IC	002 REP	W	02LIC019	02/27/02	03/05/02	03/05/02	
CHLORIDE BY IC	002 MS	W	02LIC019	02/27/02	03/05/02	03/05/02	
FLUORIDE BY IC	002	W	02LIC019	02/27/02	03/05/02	03/05/02	
FLUORIDE BY IC	002 REP	W	02LIC019	02/27/02	03/05/02	03/05/02	
FLUORIDE BY IC	002 MS	W	02LIC019	02/27/02	03/05/02	03/05/02	
NITRITE BY IC	002	W	02LIC019	02/27/02	03/05/02	03/05/02	12:24
NITRITE BY IC	002 REP	W	02LIC019	02/27/02	03/05/02	03/05/02	12:34
NITRITE BY IC	002 MS	W	02LIC019	02/27/02	03/05/02	03/05/02	12:44
NITRATE BY IC	002	W	02LIC019	02/27/02	03/05/02	03/05/02	13:04
NITRATE BY IC	002 REP	W	02LIC019	02/27/02	03/05/02	03/05/02	13:14
NITRATE BY IC	002 MS	W	02LIC019	02/27/02	03/05/02	03/05/02	13:24
PHOSPHATE BY IC	002	W	02LIC019	02/27/02	03/05/02	03/05/02	11:54
PHOSPHATE BY IC	002 REP	W	02LIC019	02/27/02	03/05/02	03/05/02	12:04
PHOSPHATE BY IC	002 MS	W	02LIC019	02/27/02	03/05/02	03/05/02	12:14
SULFATE BY IC	002	W	02LIC019	02/27/02	03/05/02	03/05/02	
SULFATE BY IC	002 REP	W	02LIC019	02/27/02	03/05/02	03/05/02	
SULFATE BY IC	002 MS	W	02LIC019	02/27/02	03/05/02	03/05/02	
NITRATE NITRITE	002	W	02LN3A16	02/27/02	03/07/02	03/07/02	
NITRATE NITRITE	002 REP	W	02LN3A16	02/27/02	03/07/02	03/07/02	
NITRATE NITRITE	002 MS	W	02LN3A16	02/27/02	03/07/02	03/07/02	
TOTAL ORGANIC CARBON	002	W	02LTC013	02/27/02	03/19/02	03/19/02	
TOTAL ORGANIC CARBON	002 REP	W	02LTC013	02/27/02	03/19/02	03/19/02	
TOTAL ORGANIC CARBON	002 MS	W	02LTC013	02/27/02	03/19/02	03/19/02	
PH	002	W	02LPH015	02/27/02	03/04/02	03/04/02	
PH	002 REP	W	02LPH015	02/27/02	03/04/02	03/04/02	
TOTAL INORGANIC CARB	002	W	02LTCB13	02/27/02	03/19/02	03/19/02	
B12XM2							
ALKALINITY	003	W	02LAK009	02/27/02	03/06/02	03/06/02	
CHLORIDE BY IC	003	W	02LIC019	02/27/02	03/05/02	03/05/02	
FLUORIDE BY IC	003	W	02LIC019	02/27/02	03/05/02	03/05/02	

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-114 H1707

DATE RECEIVED: 03/02/02 LVL LOT # :0203L110

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
NITRITE BY IC	003	W	02LIC019	02/27/02	03/05/02	03/05/02	14:05
NITRATE BY IC	003	W	02LIC019	02/27/02	03/05/02	03/05/02	14:15
PHOSPHATE BY IC	003	W	02LIC019	02/27/02	03/05/02	03/05/02	13:54
SULFATE BY IC	003	W	02LIC019	02/27/02	03/05/02	03/05/02	
NITRATE NITRITE	003	W	02LN3A16	02/27/02	03/07/02	03/07/02	
TOTAL ORGANIC CARBON	003	W	02LTC013	02/27/02	03/19/02	03/19/02	
PH	003	W	02LPH015	02/27/02	03/04/02	03/04/02	
TOTAL INORGANIC CARB	003	W	02LTCB13	02/27/02	03/19/02	03/19/02	

LAB QC:

ALKALINITY	MB1	W	02LAK009	N/A	03/06/02	03/06/02
ALKALINITY	MB1 BS	W	02LAK009	N/A	03/06/02	03/06/02
ALKALINITY	MB1 BSD	W	02LAK009	N/A	03/06/02	03/06/02
CHLORIDE BY IC	MB1	W	02LIC019	N/A	03/05/02	03/05/02
CHLORIDE BY IC	MB1 BS	W	02LIC019	N/A	03/05/02	03/05/02
FLUORIDE BY IC	MB1	W	02LIC019	N/A	03/05/02	03/05/02
FLUORIDE BY IC	MB1 BS	W	02LIC019	N/A	03/05/02	03/05/02
NITRITE BY IC	MB1	W	02LIC019	N/A	03/05/02	03/05/02
NITRITE BY IC	MB1 BS	W	02LIC019	N/A	03/05/02	03/05/02
NITRATE BY IC	MB1	W	02LIC019	N/A	03/05/02	03/05/02
NITRATE BY IC	MB1 BS	W	02LIC019	N/A	03/05/02	03/05/02
PHOSPHATE BY IC	MB1	W	02LIC019	N/A	03/05/02	03/05/02
PHOSPHATE BY IC	MB1 BS	W	02LIC019	N/A	03/05/02	03/05/02
SULFATE BY IC	MB1	W	02LIC019	N/A	03/05/02	03/05/02
SULFATE BY IC	MB1 BS	W	02LIC019	N/A	03/05/02	03/05/02
NITRATE NITRITE	MB1	W	02LN3A16	N/A	03/07/02	03/07/02
NITRATE NITRITE	MB1 BS	W	02LN3A16	N/A	03/07/02	03/07/02
TOTAL ORGANIC CARBON	MB1	W	02LTC013	N/A	03/19/02	03/19/02
TOTAL ORGANIC CARBON	MB1 BS	W	02LTC013	N/A	03/19/02	03/19/02
TOTAL INORGANIC CARB	MB1	W	02LTCB13	N/A	03/19/02	03/19/02
TOTAL INORGANIC CARB	MB1 BS	W	02LTCB13	N/A	03/19/02	03/19/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU0HANFORD B01-114 H1707
LVL#: 0203L110

W.O.#: 11343-606-001-9999-00
Date Received: 03-02-02

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 water samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary. For the determination of Total Inorganic Carbon, aliquots of the unpreserved samples submitted were analyzed for Total Carbon (Total Carbon – Total Organic Carbon = Total Inorganic Carbon).

3. All results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of the exceeded holding times for Nitrate, Nitrite, Phosphate and pH.

4. Sample holding times as required by the method and/or contract were met with the exception of those received past hold (see sample chronology summary for analysis times).

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Alkalinity was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% RPD control limit.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

03-21-02
Date

njp\i03-110

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
✓ Alkalinity ___Bicarbonate ___Carbonate	✓ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
✓ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrate ✓ Nitrite ✓ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___Formate ___Acetate ___Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
✓ Nitrate-Nitrite ___Nitrate ___Nitrite	✓ 353.2		
Ammonia	___ 350.3		
Total ___Kjeldahl ___Organic Nitrogen	___ 351.3		
Total ✓ Organic ✓ Inorganic Carbon	✓ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
✓ pH ____ pH; paper	___ 150.1	✓ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach	___ 1312		
Total ___Dissolved ___Suspended ___Solids	160 ___.1 ___.2 ___.3		
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		

Other: **Method:**

L-WI-034/A-01/01

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/20/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	B140B4	Alkalinity	132	MG/L	1.0	1.0
		Chloride by IC	22.3	MG/L	2.5	10.0
		Fluoride by IC	0.29	MG/L	0.25	1.0
		Nitrite by IC	2.50 u	MG/L	2.50	10.0
		Nitrate by IC	131	MG/L	12.5	50.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	54.1	MG/L	2.5	10.0
		Nitrate Nitrite	37.3	MG/L	2.0	100
		Total Organic Carbon	2.0	MG/L	0.50	1.0
		pH	8.0	PH UNIT	0.01	1.0
		Total Inorganic Carbon	30.4	MG/L	2.5	1.0
-003	B12XM2	Alkalinity	130	MG/L	1.0	1.0
		Chloride by IC	22.6	MG/L	2.5	10.0
		Fluoride by IC	0.30	MG/L	0.25	1.0
		Nitrite by IC	2.50 u	MG/L	2.50	10.0
		Nitrate by IC	135	MG/L	12.5	50.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	54.8	MG/L	2.5	10.0
		Nitrate Nitrite	37.6	MG/L	2.0	100
		Total Organic Carbon	2.1	MG/L	0.50	1.0
		pH	7.8	PH UNIT	0.01	1.0
		Total Inorganic Carbon	30.4	MG/L	2.5	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/20/02

CLIENT: TNUHANFORD B01-114 H1707

LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LAK009-MB1	Alkalinity	1.0 u	MG/L	1.0	1.0
BLANK10	02LIC019-MB1	Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.25 u	MG/L	0.25	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Phosphate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	02LN3A16-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	02LTC013-MB1	Total Organic Carbon	0.50 u	MG/L	0.50	1.0
BLANK10	02LTCB13-MB1	Total Inorganic Carbon	0.50 u	MG/L	0.50	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/20/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	B140B4	Chloride by IC	67.8	22.3	50.0	91.1	10.0
		Fluoride by IC	5.7	0.29	5.0	108.1	1.0
		Nitrite by IC	49.0	2.50u	50.0	98.0	10.0
		Nitrate by IC	384	131	250	101.1	50.0
		Phosphate by IC	5.0	0.25u	5.0	99.8	1.0
		Sulfate by IC	152	54.1	100	97.5	20.0
		Nitrate Nitrite	85.1	37.3	50.0	95.6	100
		Total Organic Carbon	7.2	2.0	5.0	102.7	1.0
BLANK10	02LAK009-MB1	Alkalinity	98.5	1.0 u	100	98.5	1.0
		Alkalinity MSD	99.0	1.0 u	100	99.0	1.0
BLANK10	02LIC019-MB1	Chloride by IC	4.8	0.25u	5.0	96.1	1.0
		Fluoride by IC	5.0	0.25u	5.0	99.6	1.0
		Nitrite by IC	5.46	0.25u	5.00	109.2	1.0
		Nitrate by IC	4.73	0.25u	5.00	94.6	1.0
		Phosphate by IC	4.6	0.25u	5.0	92.3	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.8	1.0
BLANK10	02LN3A16-MB1	Nitrate Nitrite	0.51	0.02u	0.50	102.4	1.0
BLANK10	02LTC013-MB1	Total Organic Carbon	4.8	0.50u	5.0	96.1	1.0
BLANK10	02LTCB13-MB1	Total Inorganic Carbon	4.8	0.50u	5.0	96.1	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 03/20/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	02LAK009-MB1	Alkalinity	98.5	99.0	0.51

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/20/02

CLIENT: TNUHANFORD B01-114 H1707 LVL LOT #: 0203L110

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	B140B4	Alkalinity	132	132	0.00	1.0
		Chloride by IC	22.3	22.7	2.1	10.0
		Fluoride by IC	0.29	0.30	2.1	1.0
		Nitrite by IC	2.50u	2.50u	NC	10.0
		Nitrate by IC	131	131	0.027	50.0
		Phosphate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	54.1	53.7	0.78	10.0
		Nitrate Nitrite	37.3	35.7	4.4	100
		Total Organic Carbon	2.0	2.0	1.3	1.0
		pH	7.9	7.9	0.3	1.0

Lionville Laboratory Use Only

0203L110

Custody Transfer Record/Lab Work Request

Page 1 of ___

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

VLI LIONVILLE LABORATORY INC.

Client: TMU Hanford SAF # B01-114

Est. Final Proj. Sampling Date: ___

Project #: 11343-606-001-9999-00

Project Contact/Phone #: ___

Lionville Laboratory Project Manager: OJ

QC: SPEC Del: STD TAT: 30 days

Date Rec'd: 3-2-02 Date Due: 4-1-02

		A-C	D,E						F		G	H	I	J		
Refrigerator #		1	4						4		4	1	4	4		
#/Type Container	Liquid	3ag	2ag						1p		1p	1ag	1p	1p		
	Solid	J	J													
Volume	Liquid	40	1L						500		250	500	500	500		
	Solid															
Preservatives		HCL/H2SO4	—						HNO3		—	HCL H2SO4	—	HCL H2SO4		
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Alk.	TIC TOC	IC Anions	NO2, NO3		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0624 X	0625 X						Metal ①		Alk CL	TIC TOC	IC pH	IC NO2 NO3		
S - Soil, SE - Sediment, SO - Solid, SL - Sludge, W - Water, O - Oil, A - Air, DS - Drum Solids, DL - Drum Liquids, L - EP/TCLP Leachate, WI - Wipe, X - Other, F - Fish	001	B144H9			W	2/27/02	0723	X														
	002	B140B4			⊥	⊥	1410	X	X						X		X	X	X	X		
	003	B12Xm2			⊥	⊥	⊥	X	X						X		X	X	X	X		

Special Instructions: SAF # B01-114

Run Matrix QC

DATE/REVISIONS:

Metal ① 1. Cd, Ca, Cr, Fe, Mg, Ni, Na, Zn, P

IC ① 2. ICCL, ICFL, ICNO3, ICNO2, ICPO4, ICSO4

3. ___

4. ___

5. ___

6. ___

Lionville Laboratory Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___ Airbill # 7903 2587 6820

2) Ambient or Chilled

3) Received in Good Condition (Y) or N

4) Samples Properly Preserved (Y) or N

5) Received Within Holding Times (Y) or N pH IC #01/02/04

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N

2) Unbroken on Outer Package (Y) or N

3) Present on Sample (Y) or N

4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 2.6 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES:

Relinquished by	Received by	Date	Time
Hew Ex	[signature]	3/2/02	10:55

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Bec[redacted] Hanford Inc.	CHAIN OF CUSTODY/[redacted]PLE ANALYSIS REQUEST	B01-114-53	Pa[redacted] of [redacted]

Collector Renee Nielson	Company Contact Virginia Rohay	Telephone No. 372-9100	Project Coordinator TRENT, SJ
Project Designation PFP Well Installation Sampling and Analysis - Water	Sampling Location 200 West		SAF No. B01-114
Ice Chest No. ERC-02-005	Field Logbook No. EL-1562-1	COA T20ZP1D722	Method of Shipment Federal Express
Shipped To TMA/RECRA RECRA	Offsite Property No. A020193		Bill of Lading/Air Bill No. 79032587-6820

Price Code 7N

Data Turnaround 45 Days

Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 PCi/g Per historical Data

Special Handling and/or Storage
Cool 4C

Preservation	HCl or H2SO4 to pH <2 Coo											
Type of Container	aGs*											
No. of Container(s)	3											
Volume	40mL											
SAMPLE ANALYSIS	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)											

Sample No.	Matrix *	Sample Date	Sample Time										
B144H9	WATER	2/27/02	0723	X									

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: RNielson / R Nielson	2/27/02 1623	Received By/Stored In: Ref # 1A	2/27/02 1623
Relinquished By/Removed From: Ref 1A 3728	0400 2-28-02	Received By/Stored In: RThomas	0400 2-28-02
Relinquished By/Removed From: RThomas ERC	0400 2-28-02	Received By/Stored In: FED ex	
Relinquished By/Removed From: Fed Ex	3-2-02 10:55	Received By/Stored In: [illegible]	3-2-02 10:55
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2-28-02

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (12/31/2001)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-114-48	Page 1 of 1

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West	SAF No.: B01-114	
Ice Chest No.: ERC-02-005	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA (1) RECRA	Offsite Property No.: A20165 93		Bill of Lading/Air Bill No.: 74032587-6820

POSSIBLE SAMPLE HAZARDS/REMARKS: <2000 pCi/g. Per historical Data

Special Handling and/or Storage: Cool 4C

Preservation	None	Cool 4C	HCl or H2SO4 to pH <2	HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	HCl or H2SO4 to pH <2 Coo	HNO3 to pH
Type of Container	P	P	P	G	P	P	P	aG	aGs*	
No. of Container(s)	1	1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
SAMPLE ANALYSIS	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B140B4	WATER	2/27/02	1410		X		X	X	X	X	X	X	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: Renee Nielson / R. Nielson 2-27-02	1623	Received By: Stone Lin / REF #1A 2/27/02	1623
Relinquished By: Remo Rodriguez / Ref 1A 3728 2-28-02	0900	Received By: R Thoren	0900 2-28-02
Relinquished By: R Thoren / ERC 2-28-02	0900	Received By: FED EX	
Relinquished By: Fed Ex	3-2-02 10:55	Received By: [illegible]	3-2-02 10:55
Relinquished By		Received By	
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(4) ~~Gross Alpha; Gross Beta; Gamma Spectroscopy {Cesium-137, Cobalt-60}; Gamma Spec - Add-on {Antimony-125, Ruthenium-106}; Americium-241; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Uranium~~

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT.

Matrix *: S=Soil; SE=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector: Renee Nielson	Company Contact: Virginia Rohay	Telephone No.: 372-9100	Project Coordinator: TRENT, SJ
Price Code: 7N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: PFP Well Installation Sampling and Analysis - Water	Sampling Location: 200 West; Well Number C3803, Well Name 299-W15-42		SAF No.: B01-114
Ice Chest No.: ERC-02-005	Field Logbook No.: EL-1562-1	COA: T20ZP1D722	Method of Shipment: Federal Express
Shipped To: TMA/RECRA RECEIVE	Offsite Property No.: A020193		Bill of Lading/Air Bill No.: 7911 7688 3488 / 49032587-6820 RT 2.28.02

POSSIBLE SAMPLE HAZARDS/REMARKS
<2000 pCi/g per historical Data.

SAMPLES STORED IN REF.# 1A AT THE 3728 SHIPPING FACILITY ON 2/27/02. COLLECTOR NOT AVAILABLE TO RELINQUISH SAMPLES ON 2/28/02 FOR SHIPMENT. RT 2-28-02

Preservation	RT 2-28-02	Cool 4C	RT 2-28-02 HCl or HNO3 to pH <2	RJN 2/27/02 HCl or H2SO4 to pH <2 Coo	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2	Cool 4C	RJN 4/5/01 HCl or H2SO4 to pH <2 Coo	RT 2-28-02 HNO3 to pH
Type of Container		P	P	aG	P	P	P	aG	aGs*	
No. of Container(s)		1	1	1	1	1	1	2	3	
Volume	125mL	250mL	250mL	500mL	500mL	500mL	500mL	1000mL	40mL	1L
	Tritium - H3	Alkalinity - 310.1	Technetium-99	TIC - 415.1M; TOC - 415.1	See item (1) in Special Instructions.	NO2/NO3 - 353.2	See item (2) in Special Instructions.	See item (3) in Special Instructions.	VOA - 8260A (TCL); VOA - 8260A (Add-On) (n-Butylbenzene)	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
B12XM2	WATER	2/27/02	1410		X		X	X	X	X	X	X	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
R. Nielson	2/27/02 1623	Stored in REF# 1A	2/27/02 1623
R. Nielson / Remote Storage	2/28/02 0900	R. Thoren	2/28/02 0900
R. Thoren ERC	2-28-02 0900	FEDEX	
Fed Ex	3-2-02 10:55		3-2-02 10:55

SPECIAL INSTRUCTIONS

The ERC acknowledges that the holding time for Nitrate Method 300.0 will not be met. The laboratory is to analyze pH within 24 hours of sample receipt. If a limited quantity of material is received, analyze in the order listed on the FSR.

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; pH (Water) - 9040
(2) ICP Metals - 6010A (TAL) {Cadmium, Calcium, Chromium, Iron, Magnesium, Nickel, Sodium, Zinc}; ICP Metals - 6010A (Add-on) {Phosphorus}
(3) Semi-VOA - 8270A (TCL); Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
~~(4) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec. Add-on {Antimony-125, Ruthenium-106}; Americium-241, Neptunium-237, Isotopic Plutonium, Strontium-89/90 -- Total Sr, Isotopic Uranium~~

RT 2-28-02

Matrix *
S=Soil
SB=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: Tru Hanford

Purchase Order/Project:

DATE: 3.2.02

SAF# / SOW# / Release #: B01-114

Laboratory SDG #: 0203L110

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☐ Yes	☑ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc faxed or emailed to client?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp and Comments:

ERC.02.005 / 2.6°C

Laboratory Sample Custodian:

Laboratory Project Manager: